

REMARKS

Applicant wishes to thank the Examiner for the attention accorded to the instant application, and respectfully requests reconsideration of the application as amended.

Formal Matters

In this amendment, claims 1-20 are pending and claim 12 is amended to make a minor editorial corrections.

Applicant appreciates that the objection to the drawings has been withdrawn, and that the abstract filed on April 24, 2007 is acceptable.

Specification

The Examiner states that a substitute specification in proper idiomatic English and in compliance with 37 CFR 1.52(a) and (b) is required. Applicant respectfully asserts that the substitute specification filed with the response of April 24, 2007 is such a substitute specification. Improper phrases have been deleted while maintaining an accurate presentation of the subject matter of the invention, and no new matter has been added.

However, the Examiner proposes additional amendments to the specification. For example, he suggests amending the phrase “the bank can be accessed speedily when compared *with the case where the bank has been closed*” to “the bank can be accessed speedily when compared *with a bank that has been closed*”. While the Examiner’s suggested amendment contains less verbiage, applicant’s phrase is proper idiomatic English, that is, it is a prepositional phrase with an appropriate object. Hence, the Examiner does not point out improper phrases or non-idiomatic English in the substitute specification. Applicant feels that the

Examiner's requirement is unduly burdensome, and respectfully requests that this requirement for another substitute specification be withdrawn.

Rejection of Claims under 35 U.S.C. §112

Claims 12 and 17 are rejected under 35 U.S.C. §112, second paragraph, as indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 12 is amended to replace "memory access control unit" with "memory access control device" for which there is antecedent basis in claim 11. This amendment provides proper antecedent basis for the memory access control device recited in claim 17. Applicant respectfully requests that this rejection be withdrawn.

Rejection of Claim 1 Under 35 U.S.C. §102

The Examiner has rejected claim 1 under 35 U.S.C. §102(b) as clearly anticipated by Farrell, U.S. Patent No. 5,665,153. This rejection should be withdrawn based on the comments and remarks herein.

Applicant's claimed invention fulfills the need for a memory access control device capable of enhancing memory access efficiency by predicting whether a hit is found in a subsequent access, and closing or not closing a memory bank after completing present access based on the prediction. For example, claim 1 recites "when a hit predicting unit predicts a hit, said memory control unit terminates a routine without closing a bank at a time of completion of present access operations and, when said hit predicting unit predicts a miss, said memory control unit closes said bank at the time of completion of present access operations and terminates the routine".

Farrell does not disclose or suggest a memory control unit that terminates a

routine either with or without closing a bank at a time of completion of present access operations, as recited the independent claim 1. Instead, Farrell discloses that when writing a computer program that accesses a page of memory, a programmer may know whether the next memory access is likely to be in the same page of memory. The programmer may then program instructions that indicate whether the next access is likely to be in the same page of memory. When these instructions are assembled, the programmer puts page control information in an unused high order address bit of the memory access. When the program is executed, a memory controller in the system executing the program reads this page control bit and determines whether to close the page after access or leave it open for the next access bit (abstract). Hence, Farrell discloses a memory controller in which hard-wired circuitry determines whether the next access is likely to be a different page of memory or the same page of memory. Based on this determination, the memory state flow diagram proceeds either to open page idle block or to close the current page and proceed to an idle block. Farrell does not disclose or suggest that the memory controller terminates a routine and closes or does not close a memory bank based on a prediction of a hit predicting unit.

In contrast, the claimed invention has as a main feature that a hit predicting unit predicts whether or not a next access to each bank in memory will be directed to a same page, based on past prediction history or results. In addition, the memory controller of the present invention terminates a routine with or without closing a memory bank based on this prediction

Hence, Farrell does not disclose or suggest “when a hit predicting unit predicts a hit, said memory control unit terminates a routine without closing a bank at a time of

completion of present access operations and, when said hit predicting unit predicts a miss, said memory control unit closes said bank at the time of completion of present access operations and terminates the routine” as recited in claim 1.

It has been held by the courts that “Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, arranged as in the claim.” *Lindemann Maschinenfabrik GMBH v. American Hoist and Derrick Company et al.*, 730 F.2d 1452, 221 USPQ 481 (Fed. Cir. 1984). As illustrated above, Farrell does not disclose suggest a memory control unit that, based on a prediction, terminates a routine either with or without closing a bank at a time of completion of present access operations, so that Farrell does not disclose every feature of the invention as recited in claim 1. Accordingly, this rejection should be withdrawn.

Rejection of Claim 11 Under 35 U.S.C. §103

The Examiner has rejected claim 11 under 35 U.S.C. §103(a) as unpatentable over Farrell, U.S. Patent No. 5,665,153. This rejection should be withdrawn based on the comments and remarks herein.

As discussed above, Farrell does not disclose or suggest a memory control unit that, based on a prediction from a hit predicting unit, terminates a routine either with or without closing a bank at a time of completion of present access operations.

It has been held by the courts that to establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. See, *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). As illustrated above, Farrell does not disclose or suggest a memory control unit that terminates a routine either with or without closing a bank at a time of completion of present access operations, and

does not disclose or suggest each and every feature of the present invention as recited in the independent claims, so that *prima facie* obviousness has not been established. Thus, claim 11 is patentably distinguishable over the art of record in the application. Hence, this rejection should be withdrawn.

Allowable Subject Matter

Applicant appreciates that claims 2-10 and 13-20 would be allowable if rewritten in independent form. For the reasons discussed above, applicant submits that claims 1 and 11 are allowable so that claims 2-10, which depend from claim 1, and claims 13-20, which depend from claim 11, are allowable as written.

Conclusion

For at least the reasons set forth in the foregoing discussion, Applicant believes that the Application is now allowable, and respectfully requests that the Examiner reconsider the rejection and allow the Application. Should the Examiner have any questions regarding this Amendment, or regarding the Application generally, the Examiner is invited to telephone the undersigned attorney.

Respectfully submitted,



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